in Regula ſuperiore, pro Q, R & S. Quo facto prodit medii denſitas

$$\text{ut } \frac{\frac{bb}{a^4}}{\frac{bb}{a^3}\sqrt{1-\frac{mm}{nn}-\frac{2mbb}{naa}+\frac{b^4}{a^4}}} \text{ ſeu } \frac{1}{\sqrt{aa+\frac{mm}{nn}aa-\frac{2mbb}{n}+\frac{b^4}{aa}}} \text{ id}$$

eſt, ſi in VZ ſumatur VY æqualis VG, ut $\frac{1}{XY}$. Namq; aa & $\frac{mm}{nn}$ $aa - \frac{2mbb}{n} + \frac{b^4}{aa}$ ſunt ipſarum XZ & ZY quadrata. Reſiſtentia autem invenitur in ratione ad Gravitatem quam habet XY ad YG, & velocitas ea eſt quacum corpus in Parabola pergeret verticem G diametrum DG & latus rectum $\frac{YX\ quad.}{VG}$ habente. Ponatur itaq; quod Medii denſitates in locis ſingulis G ſint reciproce ut diſtantiæ XY, quodq; reſiſtentia in loco aliquo G ſit ad gravitatem ut XY ad YG; & corpus de loco A juſta cum velocitate emiſſum deſcribet Hyperbolam illam AGK. Q. E. I.

Exempl. 4. Ponatur indefinite, quod linea AGK Hyperbola ſit, centro X Aſymptotis MX, NX ea lege deſcripta, ut conſtructo rectangulo $XZDN$ cujus latus ZD ſecet Hyperbolam in G & Aſymptoton ejus in V, fuerit VG reciproce ut ipſius ZX vel DN dignitas aliqua ND^n, cujus index eſt numerus n: & quæratur Medii denſitas, qua Projectile progrediatur in hac curva.

Pro DN, BD, NX ſcribantur A, O, C reſpective, ſitq; VZ ad ZX vel DN ut d ad e, & VG æqualis $\frac{bb}{DN^n}$, & erit DN æqualis $A - O$, $VG = \frac{bb}{\overline{A-O}^n}$, $VZ = \frac{d}{e}$ in $\overline{A-O}$, & GD ſeu $NX - VZ - VG$ æqualis $C - \frac{d}{e}A + \frac{d}{e}O - \frac{bb}{\overline{A-O}^n}$. Reſolvatur terminus ille $\frac{bb}{\overline{A-O}^n}$ in ſeriem infinitam $\frac{bb}{A^n} + \frac{nbbO}{A^{n+1}} + \frac{nn+n}{2A^{n+2}}bbO^2 + \frac{n^3+3nn+2n}{6A^{n+3}}bbO^3$ &c. ac fiet GD æqualis $C - \frac{d}{e}A - \frac{bb}{A^n} +$

+

$+\frac{d}{e}O - \frac{nbb}{A^{n+1}}O - \frac{nn+n}{2A^{n+2}}bb$

ſeriei terminus ſecundus $\frac{d}{e}$

tertius $\frac{nn+n}{2A^{n+2}}bbO^2$ pro Ro

So^3. Et inde Medii denſita

$$\frac{n+2}{3\sqrt{A^2+\frac{dd}{ee}A^2-\frac{2dnbb}{eA^n}A+}}$$

æqualis $n \times VG$, eſt reciproc

in $A + \frac{nnb^4}{A^{2n}}$ ipſarum XZ &

eodem loco G ſit ad Gravit

$\frac{3nn+3n}{n+2}VG$. Et velocitas

jectum in Parabola pergere

tus rectum $\frac{1+QQ}{R}$ ſeu $\frac{2}{nn}$

Quoniam motus non fi

tente, in Hyperbolis vero

petuam; perſpicuum eſt

uniformiter reſiſtente deſc

haſce quam ad Parabolam

neris, ſed quæ circa vert

partibus a vertice remotio

pro ratione Hyperbolarum

SIR ISAAC NEWTON *Philosophiae Naturalis Principia Mathematica* LONDON, 1687 THE